PUTTERHEAD WITH CENTER LINE FORWARD OFFSET HOSEL

Cross Reference to Related Applications: Applicant claims benefit of the filling date of Provisional Application No. 60/468,882, filed on 05/08/2003, and priority of that date.

~~**U.S. Patent Application**~~

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Background of the Invention

Many putters have some top marking or upper putterhead geometry indicating the intended strikepoint of the putterhead and/or the sighting aiming line (perpendicular to the strikeface). Golfers using putters without a highly visible aim line must draw an imaginary line perpendicular to the strikeface and through the golf ball to the intended target. For most golfers, a putterhead aim line provides more accurate aim than an imaginary perpendicular line from the putterhead strikeface. Generally, the longer (front to rear) and more visible the aim line is, the more accurately one can aim the putter at the target.

The Rules of Golf, as promulgated by the United States Golf Association (USGA) and the Royal and Ancient Golf Club of Scotland (the "Rules"), limit putterhead length to putterhead width. The Rules also prohibit putterhead protrusions, including those in front of the putterface and rearward from the putter face or putterhead solely for purposes of aim or alignment. Hosels or necks for connecting shafts to putterheads and bent shafts protruding forward of the strikeface are allowed. They have always been popular because it is advantageous to have the shaft axis in front of the clubhead center of gravity. This produces a static balance moment about the shaft axis which increases dynamic stability when a golfer accelerates the putterhead by applying a forward force to the shaft. This dynamic stability is most effective, by resisting putterhead rotation, when the putterhead center of gravity is directly behind the shaft axis (rather than towards the toe or heal side of it).

Since under the Rules, putterhead length (fore to aft) can not exceed putterhead width, and because the Rules do not allow appendages solely for sighting or alignment, the length of most putterhead aim lines have historically been limited to putterhead length.

Discussion of the Prior Art

Many, perhaps most, golf putters employ forward offset hosels or bent shafts (lower

section) to place the shaft axis at or in front of the faceplate plane thus improving putter dynamic stability during both acceleration and ball impact by increasing the distance between the shaft axis and the putterhead center of gravity or mass (the static balance moment). Most modern putters achieve additional stability by being "face balanced", meaning the shaft axis intersects, forward of the center of mass, a horizontal line going through the center of mass perpendicular to the putterface (assuming 0° face loft). Solheim (5,292,128), Meyer (5,544,883) and Klein (5,569,098 and 5,772,525) are examples of "face balanced" putters with forward offset hosels. None of these hosels, however, go through the center plane of the putterhead like the present invention and thus are without the sight line benefits of the present invention. One can quickly determine if a putter is "face balanced" by laying the putter's shaft horizontally across two horizontal bars (or fingers) and observing whether the putterface remains horizontal (face up).

One disadvantage of using forward offset hosels or forward bent shafts to increase the static balance moment while maintaining face balancing is that the hosel or shaft creates an asymmetrical sighting picture when viewed by a golfer from above. The offset hosel or bent shaft often obscures part of the golf ball when the ball is properly centered in front of the intended strikepoint on the putterface.

Only a forward offset hosel on the centerline vertical plane of the clubhead extending directly over the ball, like the present invention, can provide a symmetrical sighting picture when viewed from above. Several forward center line hosels are found in the prior art. None, however, provide an unobstructed and elongated sight line for improved putter aiming nor do they have the ability to be "face balanced" for improved dynamic stability.

Griffin (4,966,369) describes a putterhead with a forward extending centerline plane hosel. The hosel does not form an unobstructed sight line like the present invention because the shaft connection (and shaft location) block any potential sight line. The hosel forward

extension is not horizontal providing a poor and inaccurate sight line to the target if the golfer's eyes are not directly above the hosel and ball. Griffin can not be "face balanced" for dynamic stability because of the centerline plane hosel connection. No rearward sight line extension is possible. The primary purpose for Griffin's design is to get the center of mass in front of the strikeface unlike the present invention.

Szokola (5,267,733) describes a tubular arculate (curved) hosel extension. Unlike the present invention, it protrudes from the rear wall of the putterhead vs. the top of the strikeface before curving forward. The curved length of the hosel therefor exceeds the 5 inch USGA Rules requirement, unlike the present invention. The shaft and curved hosel extension lie in a common plane which can be adjusted. When this plane is vertical, the hosel to shaft connection and shaft blocks any potential sight line and violates the Rules of Golf which require the shaft of a putter to be at least 10° from vertical. If the shaft hosel plane is tilted 10° or more toward the player to conform to the Rules, the forward hosel extension is no longer directly over the ball and putterhead centerline like the present invention. Like Griffin, and unlike the present invention, Szokola can not be "face balanced" for improved dynamic stability. Szokola does not describe or claim an extended, unobstructed sight line. Ravaris (5,340,106) and Perkins (D 272,257) describe a putterhead similar to Szokola differing from the present invention for the same reasons.

Granelli (5,630,766) and Gunderson (6,497,628 B1) describes a centerline vertical plane hosel extension starting at the rear of the putterhead, but it does not extend past the strikeface like the present invention. Like Griffin, Szokola and Ravaris previously cited, the shaft and shaft connection prevent an unobstructed sight line and any opportunity for face balancing.

Byrne (6,422,949 B1) describes a putterhead with sight line combined with a golf ball with matching sight lines. The putterhead sight line is not provided by a vertical centerline plane forward extending hosel like the present invention.

Summary of the Invention

The present invention utilizes a novel forward offset hosel design to produce ~~an~~ a sight line or aim line which can be longer than a putterhead's length, or width. The hosel proceeds forward from a position above the intended strike point on the strikeface in a vertical plane generally perpendicular to the strikeface. The sight or aim line ~~may~~ also extends rearward along this same plane on a rearward extension of the putterhead body extending from the strikeface at the same or different elevation in such a manner that it is optically and/or physically connected or consistent with the ~~hosel~~ forward hosel extension and hosel sight line on top of it along this plane. The rearward sight line extension of the hosel ~~aim~~ sight line ~~can~~ goes the entire putterhead length (fore to aft) or ~~any~~ a significant portion thereof. The forward extension of the hosel can go part way or all the way to a position slightly in front of a golf ball proximate to or in contact with the strikeface. The Rules limit overall hosel length (from the sole of the putterhead to the straight portion of the golf shaft) to 5 inches. In a preferred embodiment of the present invention, it is desirable for putter dynamic stability to have the shaft axis penetrate a vertical plane through the putterhead center of gravity and intended strikepoint, such plane being perpendicular to the strikeface, at the elevation of the center of gravity. This requirement, plus the maximum 5 inch hosel length of the Rules, limits the hosel forward extension length to about one half ~~a~~ to one golf ball diameter in front of the strike face.

One object of the present invention is to provide a long unobstructed sight line by using the top of a putterhead center line located forward hosel extension, the hosel sight line, as part ~~or all~~ of said sight line which sight line also extends rearward, the "rearward sight line" at least twice the length of said hosel sight line.

A second object of the present invention is to provide a sight line portion forward of and above the strikeface, extending over all or part of a golf ball centered in front of and proximate to the intended strikepoint.

Still another object of the present invention is to provide an increased static balance moment by moving the hosel to shaft connection point and shaft axis well forward of the strikeface and putterhead center of gravity.

Brief Description of the Drawings

The various features, advantages and operating principles of the present invention will become more apparent by reference to the following descriptions and drawings in which:

Fig. 1 is a frontal or face view of a putterhead of one embodiment of the present invention with a golf ball centered in front of said putterhead face.

Fig. 2 is an elevational view of the embodiment of Fig. 1 with said golf ball proximate to said putterhead strikeface.

Fig. 3 is a plan view of the embodiment of Figs. 1 and 2 with a golf ball in front of said face and under the extended hosel of the present invention.

Fig. 4 is a frontal or face view of a putterhead of a second embodiment of the present invention in which the shaft axis intersects both the horizontal and vertical planes through the putterhead center of gravity.

Fig. 5 is an elevational view of the embodiment of Fig. 4 also showing triangular shaped openings through the vertical member below the sight or aim line which member was solid in Fig. 2 with half of a golf ball below the forward extended hosel.

Fig. 6 is a plan view of the embodiment of Fig. 4 with half of a golf ball below the forward extended hosel.

Fig. 7 is a plan view of another preferred embodiment of the present invention with a hosel similar to the embodiment of Figs. 4, 5, and 6 but with a major or majority portion of putterhead weight concentrated within a mass ring concentric about and remote from the putterhead center of gravity.

Description of the Preferred Embodiments

Referring to the Drawings, Figs. 1, 2 and 3 describe frontal or putterface elevational, side elevational and plan views, respectively, of one embodiment of the present invention in which the centerline forward extending hosel 1 protrudes forward, generally horizontally, from the putterface 2 at an elevation above the putter soleplane equal to or greater than the diameter of a golf ball (1.68 inches or 4.27 mm) thus avoiding interference or contact with said hosel when a ball is being struck by said putter. In this embodiment the forward hosel extension 1, protrudes forward from the face a distance approximately equal to a golf ball. The lateral 3 and upward 4 hosel sections are so arranged that the putter shaft 5 does not obscure any portion of a golf ball 6 when viewed from above (Fig. 3). Alternatively, hosel sections 3 and 4 may be replaced by a bent lower shaft section (not shown). The sight line on the top surface of the forward protruding hosel section 1, the "hosel sight line", and ~~any~~ the rearward extension of same 7, "rearward extending sight line" or "rearward sight line", provide a longer sight line than would otherwise be possible without use of said forward hosel extension 1 as part of said sight line, said rearward extension 7 does not function as a hosel (shaft to clubhead connection), but ~~may~~ provides or supports a rearward extending sight line 10, ~~or~~ and may help support the faceplate 2 and forward extending hosel section 1 through (not shown) or above it (shown), or the sole 8. In this embodiment, the distance between the sole plane of the putterhead 8 and the straight shaft connection point 9 is equal to or slightly less than 5 inches or 12.7 mm as currently required under The USGA Rules of Golf. The end of ~~the~~ said upward hosel section 4 is fitted with a stop surface 9 and a slip over protrusion ~~10~~ 11 (shown) or socket (not shown) for receiving and attaching via adhesive or other means, a puttershaft 5. That portion of the putterhead with ~~optional~~ said rearward ~~hosel and~~ sight line extension 7 protruding rearward from the putterface 2 has a length equal to or slightly less than the horizontal width of said putterhead 2. The horizontal plane upper surface 10 of both ~~the~~ said forward 1 and rearward 7

~~hosel~~ sight line extensions ~~can be~~ are preferably of one color or finish (shown), contrasting with any adjacent putterhead portions visible to a golfer from above ~~preferably black or dark~~, or have a black or dark line (not shown) centered on said surface 10.

Figs. 4, 5, and 6 show a preferred embodiment of the present invention where the forward hosel section 12 extends approximately 1/2 golf ball diameter forward of the putterface 2. The lateral hosel section 13 is longer and may be of thinner section than in the prior embodiment (3 in Figs. 1, 2 and 3). This makes this section 13 and the lower shaft 5 less visible when viewed by a golfer from above (Figs. 3 and 6). To further reduce the shaft connecting hosel section visibility and any related sighting distraction, that portion of the lateral hosel section 3 or 13 or bent lower shaft lying over a golf ball (which ball 6 is touching or near the putterface 2 at or near the intended strikepoint 15) can be painted or finished white or light in color to take such hosel section 3 or 13 out of optical view and blend with the ball below it. To further enhance the sight picture when viewed by a golfer from above, the first several inches of the golf shaft 5 near the hosel and now directly over the ball can be painted or finished dull green or other dark non-glossy color.

In Figs. 4, 5, and 6, the upper horizontal rearward ~~hosel~~ sight line extension surfaces may be on one level, as shown as 10 on Figs. 1, 2, and 3 or of multiple levels 16 and 17 in Figs. 4, 5, and 6. These horizontal plane surfaces may be preferably of white or light finish with a contrasting black or dark sight or aim line 20 (as shown in Fig. 6) or of a single color. The top surface of the putter sole 18 and any other putter surfaces visible to a golfer from above can be of a color contrasting with the color of 10, 16 or 17. In the preferred embodiment of Fig. 6, that portion of the sole plate 18 and other putterhead surfaces visible to a golfer from above which are within 1/2 golf ball diameter of the centerline are of light or white finish, while more remote surfaces, 19 and 20, are of a contrasting dull dark or green finish to take them out of optical view. In this manner, the light or white surfaces, being centered and of approximately one ball

diameter in width, establish a sighting field which includes, and is extended by, the golf ball 6 near or contacting the centerpoint 15 of the putterface 2 when viewed by a golfer from above at address. A sight line or aim line 20, preferably dark or black, centered on the top surface of the forward hosel extension 16 and rearward ~~17 hosel~~ sight line 17 extensions or the entire top surfaces themselves (16 and 17) of dark or black finish, can be further extended by placing a dark or black partial or full circumferenced line 21 of similar width on an equator of the golf ball and orientating such line toward the target prior to addressing the ball with a putterhead of the present invention.

Fig. 5 shows that the rear ~~hosel and~~ sight line extension 7 need not be of solid construction to reduce or redistribute putterhead weight. This ~~hosel~~ extension 7 may contain holes or apertures 23, or be made of lighter weight materials (not shown), or supported by structural members 22.

Fig. 7 describes a putterhead of the present invention differing from the embodiment described in Fig. 6 with respect to weight distribution within the putterhead. A major or majority portion of putterhead weight is located within a "mass ring" which ring has an outside diameter equal to the maximum horizontal plane distance between the putterhead center of gravity, and an inside diameter equal to 75% of said outside diameter. This weight distribution produces putterheads of extremely high Moment of Inertia (MOI) which reduces distance loss and misdirection whenever a ball is struck on the putterface 2 at a point remote from the intended strikepoint 15 which is directly in front of the putterhead center of gravity point 24.

Putterhead interior weight is reduced by using thin or perforated sections, or light weight materials such as aluminum, magnesium, titanium, or plastics, or combinations thereof for putterhead components interior to said mass ring. Mass ring components including the lateral 24 and rearward 25 weights can be of tungsten, lead, brass, steel, or other dense material and of longer or shorter arculate length as necessary. It is desirable to have the depth of weighting

members such as 24 exceed their radial dimension both to keep most mass ring weight as close as possible to the outside mass ring diameter and to reduce the horizontal plane area and visual impact of all putterhead components outside the one golf ball diameter wide sighting field as previously described in Fig. 6. Thin section horizontal plane arches 26 support and rigidize relatively thin face 2 and weight supports 27. Color, finish, and sight lines for Fig. 7 are as described in Fig. 6.

The preceding drawings and descriptions present various embodiments of the present invention. Variations of these descriptions utilizing the principles and teachings described, remain within the scope of the present invention. What is claimed is: